

# What Literacy Research in Augmentative and Alternative Communication Has to Say to Practitioners and Consumers

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## Goals of this Review

- To provide a comprehensive synthesis of the peer-reviewed literature on literacy in AAC...
  - anchored in instructionally-relevant, theoretical models of literacy.
  - focused on
    - implications for literacy instruction and learning.

## Underlying Premises of this Review

- *A focused (and critical) definition of literacy:*
  - Literacy = reading and writing traditional orthography
  - Other “literacies” (symbolic communication, cultural, technological, new...) are viewed as important competencies but not as literacy.
- Reading and writing are cognitive acts of print-based meaning-making.
- Literacy learning is lifelong and begins at birth.
  - *Emergent literacy* is the term used to describe the early, idiosyncratic, and nonconventional understandings and use of reading and writing.
  - *Emergent literacy* is also the term used to describe skills that are not conventional literacy themselves but rather foundational to conventional literacy learning.
- AAC users can and do learn to read and write conventionally, if taught in ways that address their needs and interests.

## Literature Search

- Literature reviewed in this presentation found by searching:
  - All issues of AAC currently published (1985 - present)
  - *Education Research Complete* electronic database
  - *ERIC* electronic database
  - Dr. Koppenhaver’s digital files on literacy and disability
  - References in studies gathered
  - Literature reviews by Koppenhaver & Yoder (1992); Koppenhaver, Hendrix, & Williams (2007); Smith (2005)

## Searches Still to Be Conducted

- *Medline*, *Dissertation Abstracts*, and *PsychINFO* electronic databases
- Call to field, particularly researchers outside the United States

## Current Search Results

- 156 papers identified
- 45 papers included in the review that met the following criteria:
  - Published in a peer-reviewed journal.
  - Addressed one or more aspects of (emergent) literacy as defined and described by the three models.
  - Identifiable research study
    - Description of participants, methods, results
  - Provided sufficient description to determine participants were AAC users or candidates.
  - Was written in English.

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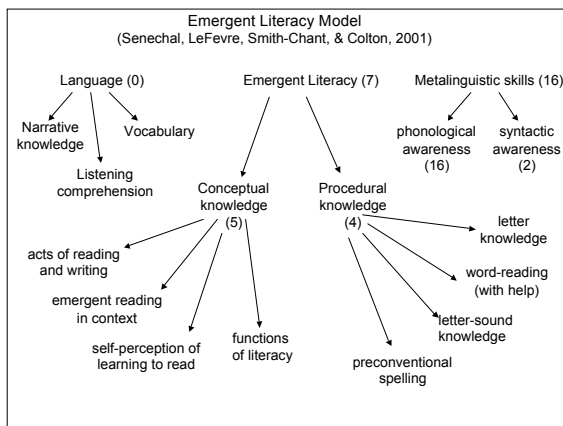
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## Dates of Publications Included

- Decade of Publication
  - 1970's - 1
  - 1980's - 8
  - 1990's - 16
  - 2000's - 20
- Conclusion:
  - Literacy is a three-decade old, modest, sustained focus in the AAC field.

## 3 Whole-to-Part Models with Instructional Relevance Selected

- Emergent Literacy
  - Senechal et al's (2001) model of the components of emergent literacy
- Reading Comprehension
  - Cunningham's (1993) model of silent reading comprehension
- Writing
  - Flower & Hayes (1981) model modified to incorporate Singer & Bashir's (2004) production component



## Emergent Literacy Model Explained (Senechal, LeFevre, Smith-Chant, & Colton, 2001)

- Propose that emergent literacy is a separate construct from oral language and metalinguistic skills.
  - Emergent literacy = behaviors associated with written language
    - i.e., behaviors involving interactions with printed artifacts
  - Oral language = behaviors and knowledge in the linguistic domain
    - i.e., vocabulary, comprehension, narrative knowledge
  - Metalinguistic skills = knowledge of language
    - i.e., phonological and syntactic awareness

## Emergent Literacy Construct

- Emergent conceptual knowledge about literacy
  - Knowledge about the acts of reading and writing
  - Knowledge about the functions of literacy
  - Self-perception of learning to read
  - Emergent reading in context
- Emergent procedural knowledge about literacy
  - Preconventional spelling in a variety of situations
  - Letter knowledge
  - Letter-sound knowledge
  - Word reading (with help)

## Emergent Literacy Studies

- Dahlgren Sandberg & Hjelmquist (1997)
- Koppenhaver & Erickson (2003)
- Light, Binger, & Kelford Smith (1994)
- Light & Kelford Smith (1993)
- Millar, Light, & McNaughton (2004)
- Skotko, Koppenhaver, & Erickson (2004)
- Trudeau, Cleave, & Woelk (2003)

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## Emergent Literacy Implications

Parents and educators need to:

- Encourage and support active and interactive participation during storybook readings (Light et al., 1994; Skotko et al., 2004; Trudeau et al., 2003).
- Provide increased amounts of, and access to, print in the learning environment (Koppenhaver & Erickson, 2003; Light & Kelford Smith, 1993).
- Consider increasing learner access to voice output (Dahlgren Sandberg & Hjelmquist, 1997).

## Language Construct

3 Components:

Narrative knowledge

Vocabulary

Listening comprehension

No studies of language identified as yet that make connections to emergent literacy.

## Metalinguistic Skills Construct

- Phonological awareness
- Syntactic awareness

## Metalinguistic Construct Summary

- |   |   |
|---|---|
| • Vandervelden & Siegel (2001)          | • Baddeley & Wilson (1985)              |
| • Vandervelden & Siegel (1999)          | • Dahlgren Sandberg & Hjelmquist (1997) |
| • Clendon, Gillon, & Yoder (2005)       | • Truxler & O'Keefe (2007)              |
| • Card & Dodd (2006)                    | • Berninger & Gans (1986)               |
| • Dahlgren Sandberg (2001)              | • Bishop & Robson (1989)                |
| • Stackhouse (1982)                     | • Iacono & Cupples (2004)               |
| • Foley & Pollatsek (1999)              | • Bishop, Brown, & Robson (1990)        |
| • Dahlgren Sandberg & Hjelmquist (1996) | • Bishop (1985)                         |

## Principal Findings Regarding Metalinguistic Skills

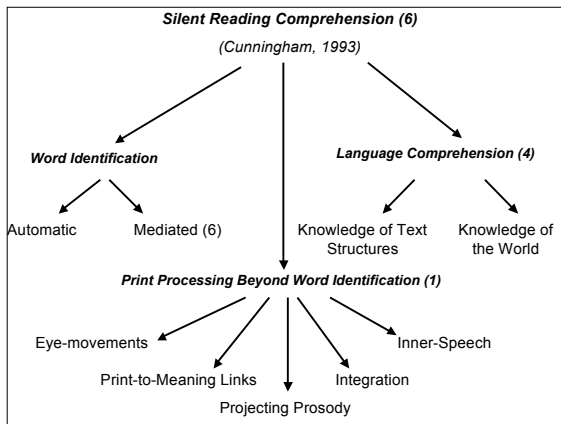
- AAC users demonstrate same positive relationship between phonological awareness (PA) and reading as other populations, but demonstrate greater difficulties in using PA to read and spell.
- Degree of speech impairment doesn't seem to be the principal factor in acquiring PA.
- Performance in these studies may reflect the poor quality of literacy instruction for children who use AAC, particularly given findings in the literature on typically developing children that PA tends to improve as they learn to read.
- Results of several studies (Clendon et al., 2005; Foley & Pollatsek, 1999; Sandberg, 2001; Sandberg & Hjelmquist, 1996) suggest that it may be critical to teach PA in immediate application to word reading and spelling.

## Emergent Literacy: Further Implications

- Practitioners and families need to understand:
  - extremely limited research in this field of study
  - assessment ≠ intervention
  - instruction doesn't have to taste like spinach to work
  - measures of generalization are more important than success in learning items taught
  - pseudowords are more appropriate to research than intervention

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## Reading Research Summary

Silent reading with comprehension	Dahlgren Sandberg (1998) Dahlgren Sandberg & Hjelmquist (1997) Koppenhaver, Evans, & Yoder (1991) Berninger & Gans (1986) Smith (1992) Smith (1989)
Word identification	Fallon, Light, McNaughton, Drager, & Hammer (2004) Stackhouse (1982) Truxler & O'Keefe (2007) Berninger & Gans (1986) Iacono & Cupples (2004) Hanser & Erickson (2007)
Language comprehension	Liboiron & Soto (2006) Berninger & Gans (1986) Dahlgren Sandberg & Hjelmquist (1997) Dahlgren Sandberg (2001)
Print processing	Berninger & Gans (1986)

## Summary: Silent Reading Comprehension

- AAC users are at a greater risk for reading comprehension difficulties (Berninger & Gans, 1986; Dahlgren Sandberg & Hjelmquist, 1997; Smith 1989, 1992)
- It's important to increase language use and participation of AAC users (Dahlgren Sandberg, 1998; Koppenhaver, Evans & Yoder, 1991; Smith, 1992)

## Summary: Word identification studies

- Researchers test many aspects of word learning, but assessment isn't instruction.
- Use of pseudowords is an assessment, not a form of instruction.
- Children learn what they are taught (Fallon, et al., 2004; Hanser & Erickson, 2007; Truxler & O'Keefe, 2007).
- Integrated instruction may lead to more efficient word learning.

## Summary: Language Comprehension studies

- Sentence and passage comprehension may be relative strengths for AAC users (Berninger & Gans, 1986; Dahlgren Sandberg, 2001).
- Language and reading ability are related (Dahlgren Sandberg & Hjelmquist, 1997).
- If you scaffold language, you can increase interpretation, metalanguage and inference (Liboiron & Soto, 2006).

## Print Processing (Inferred)

Berninger & Gans (1986)	Word identification (Gates-MacGinitie Vocab Subtest)	Language comprehension (CELF Paragraph Comprehension)	Print processing (Gates-MacGinitie Comprehension Subtest)
9-yr-old	1st grade	9th grade	1st grade
16-yr-old	4th grade	10-12th grade	almost 3rd grade
40-yr-old	4th grade	12th grade+	Found so frustrating he responded randomly.

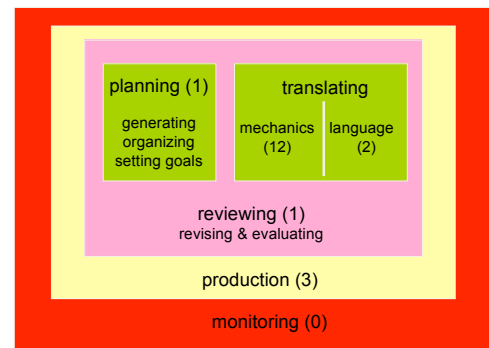
Inferring from results provided, print processing is greatest instructional need of 16-yr-old and 40-yr-old. Word identification is greatest need of 9-yr-old. See Erickson, Koppenhaver, & Yoder (2006).

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## Summary: Print processing studies

- Language may be a relative strength, and print processing a relative need (Berninger & Gans, 1986).
  - Easiest way to improve print processing may be by reading lots of easy texts.



Whole-to-Part Model of Written Composition (4)  
Adapted from Flower & Hayes (1981) and Singer & Bashir (2004)

## Written Composition Model Summary

Composition	Kelford Smith, Thurston, Light, Parnes, & O'Keefe (1989) Koppenhaver, Evans, & Yoder (1991) Bedrosian, Lasker, Speidel, & Politsch (2003) Williams, Koppenhaver, & Wollak (2007)
Translation (spelling)	Stackhouse (1982)      Bedrosian, Lasker, Speidel, & Politsch (2003) Truxler & O'Keefe (2007)      Berninger & Gans (1986) McNaughton & Tawney (1993)      Basso, Taborelli & Vignolo (1978) Dahlgren Sandberg (2001)      Bishop & Robson (1989) Bishop (1985)      Hart, Scherz, Apel, & Hodson (2007) Dahlgren Sandberg & Hjelmquist (1996) Haner & Erickson (2007)
Translation (Language)	Bedrosian, Lasker, Speidel, & Politsch (2003) Kelford Smith, Thurston, Light, Parnes, & O'Keefe (1989)
Production	Newell, Booth, Arnott, & Beattie (1992) Bedrosian, Lasker, Speidel, & Politsch (2003) Kelford Smith, Thurston, Light, Parnes, & O'Keefe (1989)
Planning	Bedrosian, Lasker, Speidel, & Politsch (2003)
Reviewing	Bedrosian, Lasker, Speidel, & Politsch (2003)
Monitoring	

## Summary: Written Composition

- Literate adults write for many different purposes (Kelford Smith et al., 1989), so we must be careful not to narrow the curriculum to tested genres.
- Literate adults report rich variety of writing tools, materials, and experiences in the home and school experiences (Koppenhaver et al., 1991).
- Learning to write can be successfully supported with planning tools, writing tools, and typically developing peers (Bedrosian et al., 2003).

## Summary: Translation/Spelling

- AAC users struggle with spelling (Bishop & Robson, 1989; Dahlgren Sandberg, 2001; Dahlgren Sandberg & Hjelmquist, 1996; Stackhouse, 1982), particularly if word is not pronounced for them (Dahlgren Sandberg, 2001; Dahlgren Sandberg & Hjelmquist, 1996).
- Spelling can be taught to AAC users (Bishop & Robson, 1989; McNaughton & Tawney, 1993).
- Care must be taken in teaching not just letter-sounds or words but application of strategy (Haner & Erickson, 2007; Truxler & O'Keefe, 2007).

## Summary: Translation/Language

- Literate adult AAC users tend to use morphemes and simple sentence constructions correctly but struggle with compound and complex sentences (Kelford Smith et al., 1989).
- Collaboration with typically developing peers can be structured within naturalistic writing to support attention to morphology (Bedrosian et al., 2003).

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## Summary: Production

- AAC users write slowly (Kelford Smith et al., 1989).
- Writing tool and environment impact writing quantity, so experiment (Bedrosian et al, 2003; Williams et al, 2007).
- The “right” writing tool can result in increased: composition rate, product length, spelling accuracy, readability (Newell et al., 1992).

## Summary: Integrated Literacy Studies

- Mike (1995)
- Rogow (1994)
- Erickson, Koppenhaver, Yoder, Nance (1997)
- Blischak (1995)
- Literacy may receive little attention in special education settings serving children who use AAC (Mike, 1995).
- Integrated and diverse instructional experiences over time can lead to independent, conventional literacy acquisition (Blischak, 1995; Erickson et al., 1997; Rogow, 1994)

## Final Thoughts on Existing Research

- Don't confuse assessment with intervention.
  - Asking questions is testing, not teaching.
- Integrated interventions have been successful in teaching a variety of skills in interesting ways.
  - Don't settle for single method instructional programs.
- AAC users have successfully learned to read and write, usually with a range of learning experiences.
  - If your student/child is not having success, explore other approaches.
- Don't confuse researchers' interests with learners' needs.
  - The models are reminders of the range of knowledge and the variety of cognitive processes employed by learners (and consequently important to instructional programs).

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